Multiplying by 25

I am learning a quick way to multiply by 25.

Example:

9 x 25 = (4 + 4 + 1) x 25 because 9 is two lots of 4 and one extra
= 100 + 100 + 25 because 25 x 4 = 100
= 225

Exercise 1

Do the problems in your head first and then check you are right by writing them down. Show working like in the example.

1.	7 x 25 =	2.	5 x 25 =	3.	12 x 25 =	4.	10 x 25 =
5.	14 x 25 =	6.	11 x 25 =	7.	21 x 25 =	8.	24 x 25 =
9.	16 x 25 =	10.	15 x 25 =	11.	13 x 25 =	12.	35 x 25 =
13.	40 x 25 =	14.	25 x 25 =	15.	25 x 41 =	16.	80 x 25 =
17.	25 x 45 =	18.	37 x 25 =	19.	25 x 43 =	20.	64 x 25 =

Decimals

21.	4.5 x 25 =	22.	2.8 x 25 =	23.	25 x 4.8 =	24.	8.4 x 25 =
25.	2.5 x 45 =	26.	3.7 x 25 =	27.	2.5 x 43 =	28.	64 x 2.5 =

Exercise 2 Word Problems

1. The staff at the school each had 25 classes a week. In total they taught 39 weeks in the year. How many classes did they each teach?
2. There were 25 seats in each row in the theatre. There were 47 rows so how many seats were there altogether?
3. I run 25 km at a steady 7 minutes per kilometre. How many minutes does my run take?
4. At the end of the year Mr Grump has to mark 797 students' exams. Each student sits 25 exams so how many exams does he mark? (Now you know why he was Mr Grump!)
5. Now make up 4 problems of your own.

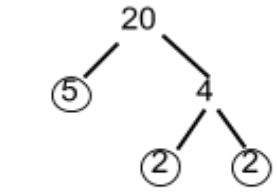
Prime Factors

I am learning to find prime factors.

Prime numbers are numbers that cannot be divided by anything except 1 and itself. 2 is the first prime number. Every whole number can be written as the product of prime numbers.

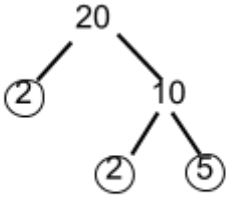
Example:

You can find these prime factors using factor trees



So: $20 = 5 \times 2 \times 2$

But we could have also used this tree:



So: $20 = 2 \times 2 \times 5$ (same answer)

Exercise

Draw a factor tree for each number to find the prime factors of these numbers:

1.	56 15	2.	48	3.	72	4.	80	5.	
6.	45 330	7.	63	8.	52	9.	250	10.	
11.	900 570	12.	108	13.	91	14.	432	15.	

Extension

1. Go back through all the previous questions.
   Find how many combinations of numbers multiply to make the original number.

2. Write all the previous answers as powers, eg $\underline{2 \times 2 \times 2 \times 5 \times 5} = \underline{2^3 \times 5^2} = \underline{200}$

Place Value with Multiplication of decimals

I am using place value to multiply decimals.

Examples:

1. $28 \times 7 = 20 \times 7 + 8 \times 7$
$= 140 + 56$
$= 196$

2. $7.2 \times 4 = 7 \times 4 + .2 \times 4$
$= 28 + 0.8$
$= 28.8$

Exercise 1

Try them in your head first. Then write them down, show your working out like the examples above.

Easy

1.	0.5 x 6	2.	0.4 x 4	3.	0.8 x 4	4.	0.3 x 8
5.	0.7 x 6	6.	0.9 x 4	7.	0.8 x 7	8.	0.7 x 9
9.	0.7 x 12	10.	0.9 x 12				

More difficult

11.	3.5 x 4	12.	6.3 x 4	13.	8.4 x 4	14.	8.7 x 4
15.	2.1 x 5	16.	4.6 x 5	17.	9.4 x 5	18.	9.7 x 5
19.	3.3 x 6	20.	5.8 x 6	21.	9.5 x 6	22.	11.4 x 6
23.	4.2 x 7	24.	6.4 x 7	25.	7.5 x 8	26.	13.4 x 8
27.	2.4 x 9	28.	6.4 x 9	29.	5.6 x 12		
30.	7.4 x 12						

Little Bites at Big Numbers - Dividing Decimals 1

I am learning to use factors to divide decimals.

Examples:

13.8 ÷ 6 13.8 ÷ 2 = 6.9 6.9 ÷ 3 = 2.3 → 13.8 ÷ 6 = 2.3

68.8 ÷ 16 68.8 ÷ 2 = 34.4, 34.4 ÷ 2 = 17.2, 17.2 ÷ 2 = 8.6, 8.6 ÷ 2 = 4.3

→ 68.8 ÷ 16 = 4.3

Exercise

Work out these, do them like the ones above.

1.	17.4 ÷ 6	2.	22.8 ÷ 6
3.	26.4 ÷ 8	4.	44.8 ÷ 8
5.	50.4 ÷ 8	6.	21.6 ÷ 12
7.	43.2 ÷ 12	8.	64.8 ÷ 12
9.	55.5 ÷ 15	10	96 ÷ 15
11.	41.6 ÷ 16	12.	70.2 ÷ 18
13.	3.68 ÷ 8	14.	8.16 ÷ 12
15.	6.75 ÷ 15	16.	20.16 ÷ 24

Hints....

6 = 2 x 3

8 = 2 x 2 x 2

12 = 2 x 2 x 3

15 = 3 x 5

16 = 2 x 2 x 2 x 2

18 = 2 x 3 x 3

24 = 2 x 2 x 2 x 3

Word Problems

1. Anton's pool is 0.24km long. Today he swam 8 laps. How many km was this?
2. Yesterday Anton swam 12 laps. How many km was this?
3. Carpeting a house costs $3018.00 and uses 24 metres of carpet. What is the price per metre?
4. Strips of edge patching carpet are 15cm wide. How many strips are needed for a gap 1.2m wide?
5. Josh bets on a horse which is paying $4 per dollar. He wins $9.60. How much did he bet?

Folding fractions 1

I am learning to multiply proper fractions.

Examples:

1. $\frac{1}{2}$ of $\frac{1}{2}$ we write as $\frac{1}{2} \times \frac{1}{2}$

   And $\frac{1}{2} \times \frac{1}{2} = \frac{1x1}{2x2} = \frac{1}{4}$

2. $\frac{1}{2}$ of $\frac{1}{4}$ we write as $\frac{1}{2} \times \frac{1}{4} = \frac{1x1}{2x4} = \frac{1}{8}$

3. $\frac{3}{10} \times \frac{4}{10} = \frac{12}{100} = \frac{3}{25}$ **simplified**

Exercise 1

Write the answer to these fraction multiplications – some of them can be simplified so check your answers carefully;

1. $\frac{1}{2} \times \frac{1}{3}$
2. $\frac{1}{2} \times \frac{1}{5}$
3. $\frac{1}{2} \times \frac{1}{7}$
4. $\frac{1}{5} \times \frac{1}{3}$
5. $\frac{1}{2} \times \frac{3}{4}$
6. $\frac{1}{2} \times \frac{5}{7}$
7. $\frac{1}{3} \times \frac{4}{5}$
8. $\frac{2}{5} \times \frac{2}{3}$
9. $\frac{2}{5} \times \frac{3}{4}$
10. $\frac{5}{7} \times \frac{3}{4}$
11. $\frac{2}{3} \times \frac{3}{4}$
12. $\frac{2}{5} \times \frac{5}{8}$

Write the answer to these fraction multiplications and check to see if you can simplify the answer

1. $\frac{2}{10} \times \frac{3}{8}$
2. $\frac{3}{10} \times \frac{2}{5}$
3. $\frac{3}{10} \times \frac{1}{2}$
4. $\frac{7}{10} \times \frac{1}{5}$
5. $\frac{2}{5} \times \frac{7}{8}$
6. $\frac{2}{5} \times \frac{3}{5}$
7. $\frac{9}{10} \times \frac{4}{5}$
8. $\frac{7}{12} \times \frac{2}{5}$
9. $\frac{12}{15} \times \frac{3}{4}$
10. $\frac{15}{16} \times \frac{4}{5}$

Exercise 3 Word Problems

1. Tony takes three-quarters of a pizza and he shares this in half with his sister Jane. What fraction of the pizza does Jane get?
2. Uncle Jim gives Sam a tenth of his Lotto winnings and Sam gives his brother Tom a quarter of what he gets from his uncle Jim. What fraction of Uncle Jim's winnings does Tom get?
3. Half of the teachers at a school are women and a quarter of these women are not married. What fraction of all the teachers at the school are women who are not married?
4. Write a word problem of your own that uses multiplication of fractions to get the answer.

Folding fractions 2

I am learning to multiply improper fractions and mixed numbers.

Examples:

1. $\frac{1}{2}$ of $\frac{2}{3}$ we write as $\frac{1}{2} \times \frac{2}{3}$

   And $\frac{1}{2} \times \frac{2}{3} = \frac{1x2}{2x3} = \frac{2}{6} = \frac{1}{3}$ **simplified**

2. $\frac{3}{2} \times \frac{9}{6} = \frac{27}{12} = 2\frac{3}{12} = 2\frac{1}{4}$ **simplified**

3. $1\frac{3}{4} \times 2\frac{1}{2} = \frac{7}{4} \times \frac{5}{2} = \frac{35}{8} = 4\frac{3}{8}$

Exercise 1

Write the answer to these fraction multiplications as a mixed number if required and check to see if you can simplify the answer

1. $\frac{1}{2}$ of $\frac{3}{2}$
2. $\frac{1}{2} \times \frac{4}{3}$
3. $\frac{1}{2}$ of $\frac{5}{3}$
4. $\frac{1}{5} \times \frac{4}{3}$
5. $\frac{1}{2} \times \frac{7}{4}$
6. $\frac{1}{2}$ of $\frac{7}{5}$
7. $\frac{4}{3} \times \frac{6}{5}$
8. $\frac{7}{5} \times \frac{5}{3}$
9. $\frac{6}{5} \times \frac{7}{4}$
10. $\frac{10}{7} \times \frac{9}{4}$
11. $\frac{8}{3} \times \frac{7}{4}$
12. $\frac{12}{5} \times \frac{9}{8}$

I am learning to use fractions to calculate percentages.

Examples:

Calculate the following percentages:

25% of 60

25% = $\frac{1}{4}$ So 25% of 60 = $\frac{1}{4}$ of 60 = 60 ÷ 4 = 15

Exercise 2

1.	10% of 70	2.	50% of 48	3.	25% of 24
4.	20% of 30	5.	10% of 120	6.	50% of 140
7.	25% of 84	8.	20% of 200	9.	10% of 300
10.	50% of 68	11.	25% of 120	12.	20% of 350
13.	10% of 1010	14.	50% of 126	15.	25% of 232
16.	20% of 175	17.	10% of 1110	18.	50% of 154
19.	25% of 288	20.	20% of 555	21.	10% of 10
22.	50% of 3256	23.	25% of 1024	24.	20% of 1200

25. Murray wants to give 50% of his coins away. If he has 350 coins, how many would he give away?
26. Jerry believes that 25% of rugby supporters like Soccer. If there are 24000 rugby supporters, how many would like Soccer?
27. Mike needs to lose 20% of his body weight. He weighs 85kgs, how many kilograms should he lose?
28. Merv puts 10% of his pocket money into his piggy bank. He currently gets $10. How much does he put into the piggy bank.
29. Merv now gets $15, how much money does he put into his piggy bank?
30. Calculate 50% of 50% of 50% of 600.

Using Benchmark Percentages

I am learning to calculate more complicated percentages using smaller steps.

Examples:

1. 75% of 60 = 50% of 60 + 25% of 60 = 30 + 15 = 45
2. 5% of 40 = ½ × 10% of 40 = ½ × 4 = 2

Calculate the following percentages:

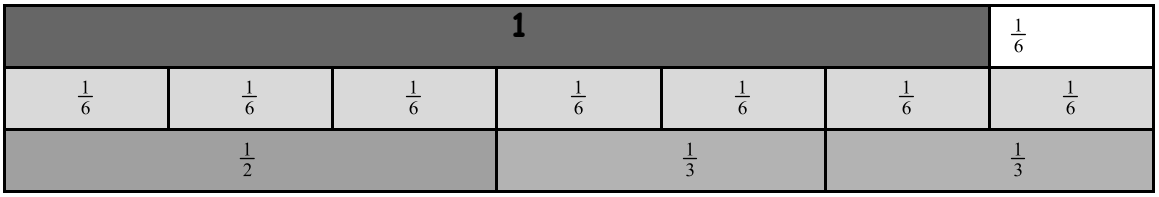
1.	30% of 80	2.	75% of 36	3.	60% of 40
4.	15% of 60	5.	70% of 150	6.	90% of 180
7.	55% of 200	8.	30% of 180	9.	70% of 250

10.	60% of 320	11.	15% of 150	12.	90% of 350
13.	55% of 800	14.	75% of 126	15.	45% of 440
16.	80% of 240	17.	5% of 1100	18.	60% of 2060
19.	75% of 280	20.	40% of 220	21.	30% of 1080
22.	70% of 8100	23.	90% of 5400	24.	15% of 160

25. Calculate 70% of 40% of 25% of 1000

Example: When denominators are not the same

$$\frac{1}{2}+\frac{4}{6} = \frac{3}{6}+\frac{4}{6} = \frac{7}{6} = 1\frac{1}{6}$$



Exercise 3

Use the fraction strips or otherwise to find and simplify the following:

1. $\frac{1}{2}+\frac{3}{4}$ 2. $\frac{7}{8}+\frac{3}{4}$ 3. $\frac{5}{6}+\frac{1}{8}$ 4. $\frac{3}{4}+\frac{5}{12}$

5. $\frac{2}{3}+\frac{4}{9}$ 6. $\frac{4}{7}+\frac{2}{14}$ 7. $\frac{5}{8}-\frac{1}{4}$ 8 $\frac{9}{8}-\frac{3}{4}$

9. $\frac{11}{12}-\frac{2}{3}$ 10. $\frac{7}{5}-\frac{1}{10}$ 11. $\frac{13}{9}-\frac{2}{3}$ 12. $\frac{7}{2}-\frac{5}{6}$

Exercise 4 Word Problems

1. Matt and Khan were sharing a bag of marbles. If Matt took $\frac{2}{5}$ of the marbles and Khan $\frac{3}{10}$, what fraction of marbles were taken altogether? What fraction of the marbles are left?

2. Kathleen did $\frac{3}{5}$ of her homework before "Home and Away" came on and $\frac{1}{10}$ of it during the programme. What fraction has she got left to do?

3. Make up a word problem of your own that adds or subtracts two fractions with different denominators